



UNITED STATES NAVY

MEDICAL NEWS LETTER

Vol. 39

Friday, 2 March 1962

No. 5

TABLE OF CONTENTS

Historical Fund of the Navy Medical Department 3

MEDICAL DIGESTS

| | |
|-----------------------------------------------------------------|----|
| The Physician's Responsibility in Therapeutic Plenty | 4 |
| Sodium Ions in Intestinal Transport of Nonelectrolytes | 9 |
| Quarantine Inspection of Inter- national Air Travelers | 10 |
| Bleeding Duodenal Ulcer | 11 |
| Resuscitation from Drowning | 12 |
| Health Problems in Nuclear Submarines | 13 |

MISCELLANY

| | |
|---------------------------------------------------------|----|
| Syphilis Control in the United States | 14 |
| Armed Forces Epidemiological Board | 15 |
| Major Cations and Coronary Vascular Resistance | 16 |
| American Board of Obstetrics and Gynecology | 17 |
| Airborne Rabies | 17 |
| Psittacosis and Hurricane Carla in Texas | 18 |
| IN MEMORIAM | 19 |
| Naval Medical Research Reports . | 19 |
| From the Note Book | 20 |

DENTAL SECTION

| | |
|--------------------------------------------------------------|----|
| Reconstruction or Periodontal Treatment First? | 22 |
| Soft Tissue Displacement Beneath Removable Dentures | 24 |
| Personnel and Professional Notes | 25 |

PREVENTIVE MEDICINE

| | |
|-----------------------------------------------------------|----|
| Clostridium Food Poisoning in Connecticut | 28 |
| Food Spoilage and Food Poisoning | 29 |
| Streptococcal Infection and Rheumatic Fever | 30 |
| Poisoning from Vending Machines | 32 |
| Search for a Shark Repellent..... | 32 |
| Shark Attacks During 1959..... | 33 |
| Synergism of Malathion Against Resistant Insects | 35 |
| Parathion Poisoning | 36 |
| Zoonoses | 37 |

RESERVE SECTION

| | |
|------------------------------------------------------------|----|
| Selective Service Call for Physicians (concluded) | 38 |
| Continuation Boards Help to Ease the "Hump" | 39 |

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No. 5

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

* * * * *

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

* * * * *

The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

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SPECIAL ARTICLE

The Physician's Responsibility in the
Age of Therapeutic Plenty *

M. C. Sheps MD MPH and A. P. Shapiro MD. Circulation XXV: 399-407,
February 1962.

NOTE: It is considered that Doctor Sheps and Doctor Shapiro, by this highly important and thought-provoking Special Article, are rendering a positive service to the practice of better and safer medicine today. Readers are encouraged to refer to the original article which contains additional sections on "The Responsibility of the Medical Profession" and "The Role of the Pharmaceutical Industry." These relate, in particular, to the various areas of remedial action and the modus operandi of planning to accomplish an improved situation. The authors cite 46 pertinent references to the medical literature. These should be helpful to anyone practicing any branch of medicine or indulging in research on the "likely-to-continue" problems associated with the explosive growth in our therapeutic armamentarium. —Editor

To the various appellations that contemporary historians are attaching to the decade of the sixties, medicine could well add the title, "The Age of Therapeutic Plenty." The veritable flood of samples of new drugs, of descriptive literature, and of promotional gimcracks that crosses the desk of the practicing physician each day is ample testimony of the "drug explosion" of recent years. In cardiovascular disease, for example, the advent of anticoagulant therapy and the development of potent hypotensive and oral diuretic agents have provided many new preparations, while the dozens of coronary and peripheral vasodilators, of sedatives and tranquilizers, and of products intended to lower blood cholesterol further contribute to this prolific growth. Hand in hand with the increased potential for pharmacologic therapy in cardiac disease has gone the development of cardiovascular surgery. This began meekly with a few simple shunts and bypasses and now is rapidly approaching the realm of the fantastic, limited not by lack of daring or dexterity, or by instrumental deficiency, but by basic immunologic phenomena which themselves are seemingly not immutable. As a result, not only does the lay press glow with therapeutic enthusiasm, but even the professional literature abounds with information of hopeful portent.

Effects of the Drug Explosion

Confronted by this apparently endless display of therapeutic wealth, the cardiologist trained in the tradition of digitalis, nitroglycerin, and therapeutic humility sometimes must find himself confused and wonder where therapeutic enthusiasm ends and therapeutic hypomania begins. To the critically minded

physician, there is cause for bewilderment. For example, after 15 years of anticoagulant therapy, argument concerning its efficacy still exists. Hypertensive drugs hailed 5 years ago are discarded as newer and seemingly more potent ones are introduced with the same fanfare. Although the role of the level of serum cholesterol in atherosclerosis remains a moot question, dietary and other measures to lower this level are widely urged. Through various media, the physician is adjured to tranquilize and to reassure, or alternatively, to exercise and motivate his cardiac patient. Particularly disturbing to him are the occasions when treatment of one symptom results in a new set of side effects requiring additional medications. Yet, despite the increase in available therapy, effects on mortality are not impressive. Physicians might have expected that the new drugs would produce improvement in mortality statistics for cardiovascular disease. It may be considered disturbing that they fail to find such improvements. Indeed, although the death rates from rheumatic and hypertensive heart disease declined slightly during the decade, 1949 to 1958, the age-specific mortality rates from arteriosclerotic heart disease during this period increased by at least 5% in every age group over 25 years among men and did not decrease in most age groups among women.

Table 1

*Deaths Ascribed to Therapeutic Misadventure as Primary Cause, U. S. 1949-1958**

| Cause of Death | Year | | | | | | | | | | Total |
|----------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|-------|
| | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | |
| Therapeutic misadventure in: | | | | | | | | | | | |
| Surgical treatment | 20 | 184 | 259 | 268 | 296 | 317 | 334 | 378 | 442 | 467 | 2965 |
| Administration of drugs or biological agents | 39 | 68 | 62 | 71 | 79 | 118 | 115 | 171 | 164 | 148 | 1035 |
| Infusion or transfusion | 51 | 45 | 87 | 84 | 66 | 71 | 83 | 103 | 131 | 103 | 824 |
| Anesthesia | 43 | 76 | 73 | 57 | 60 | 58 | 64 | 74 | 78 | 82 | 665 |
| Local applications and other or unspecified therapeutic misadventure | 7 | 137 | 118 | 105 | 91 | 124 | 21 | 30 | 37 | 42 | 712 |
| Totals | 160 | 510 | 599 | 585 | 592 | 688 | 617 | 756 | 852 | 842 | 6201 |

*Derived from Vital Statistics—Special Reports: National Summaries. (a) 38:91, 1954; (b) 42:83, 1955; (c) 48:99, 1958; (d) 52:33, 1960, U. S. Dept. Health, Education and Welfare, Public Health Service, National Office of Vital Statistics, Washington, D. C.

Furthermore, the adoption of new treatments has been accompanied by the development of therapeutically induced syndromes which have aptly been named "Diseases of Medical Progress." Reports of the National Office of Vital Statistics contain another reminder of the harm that therapeutic efforts sometimes bring. The accompanying table shows the number of deaths occurring in the years 1949 to 1958 that were certified by the attending physician as due primarily to the causes euphemistically labeled as "therapeutic misadventure." This group of categories which was first introduced in 1949 is not used "for primary death classification if the condition for which the treatment was given is known" (i. e., if the condition is stated on the death certificate). In all likelihood, therefore, the rather sizable numbers shown in the table understate the

total number of deaths that actually resulted from therapeutic misadventure. In particular, the deaths assigned to misadventure in administration of drugs or biologic agents are likely to be an underestimate because this category specifically excludes not only accidental overdose and a wrong drug given in error but also allergic reactions to drugs. Furthermore, it does not include deaths ascribed, without mention of drugs, to conditions such as agranulocytosis, aplastic anemia, and purpura which may result from drug therapy. Yet, in most of these years, more deaths have been assigned to misadventure in the therapeutic administration of pharmaceutical agents than to misadventure from either anesthesia or transfusion and infusion. Fewer patients, of course, are exposed to anesthesia or to transfusions and infusions than to drugs and biologic preparations, and the average risk accordingly is less with pharmaceutical therapy. Nevertheless, the figures in Table 1 indicate that the administration of drugs and biologic agents, in accordance with recommended dosage carries a risk of death that is not negligible.

On the brighter side, unquestionable therapeutic progress has been made. Rheumatic heart disease is on the wane, syphilitic heart disease is a rarity, the patient with malignant hypertension is not inevitably doomed, the edema and other discomforts of the cardiac cripple can be controlled, and the patient with a coronary thrombosis is no longer shunted out of a productive existence, to mention only a few advances. The period of therapeutic frustration in cardiovascular disease lies in the past when physicians sat by and waited for nature to provide its own remedy or to follow its inevitable course. Yet, perhaps as a reaction to this long period of frustration, the pendulum may have swung so far that now there sometimes is too much emphasis on being able to treat, rather than on the question of what is accomplished by treatment.

As physicians, the basic function is the relief of suffering and prevention of death; consequently, in therapeutic questions, not only self-esteem but also feelings for humanity may be arrayed against the truth. In most fields of science, a conclusion is rarely admitted to be true until its opposite has been proved untrue. But in medicine, there is an inclination to "give the patient the benefit of the doubt" and to feel compelled to try the newest therapy, even on inadequate or inconclusive evidence. Here, logic has perhaps been set awry. It is not therapeutic nihilism to demand proof of efficacy of a new drug, for with increased therapeutic potential have come increased therapeutic risks. To the medical risks must be added social and economic complications that have disturbed various nonmedical agencies and committees. It would seem timely, therefore, lest some gains of therapeutic accomplishments are undone, to outline a few current examples of questionable practices and unjustified enthusiasms in the field of cardiovascular therapy. There should also be considered the causes for the present state. It is proper to suggest some remedies and safeguards for the future. For, as was aptly stated by a "Professor Bigelow of Boston" in reference to therapeutic evaluation in a nineteenth century text on *Materia Medica*, "it is for truth that we must earnestly seek, even when its developments do not flatter our professional pride nor attest to the infallibility of our art."

Some Current Problems

The history of anticoagulant drugs demonstrates a familiar example of a situation in which experience has failed to solve a therapeutic controversy. Even in thrombophlebitis—usually considered the least debatable indication—diametrically opposing views are illustrated by different studies. Essentially, the problem has been to prove that small differences in mortality and morbidity have been due to anticoagulants in the presence of a large number of other uncontrolled variables capable of influencing the results. Since the drugs are not innocuous, such validation becomes of vital concern. At present, physicians find themselves in the situation of having a widely accepted means of therapy which is of uncertain efficacy, sufficiently tempting in theory at least to obviate abandonment and yet capable of producing considerable harm. Perhaps it is not surprising that anticoagulation at "subtherapeutic" levels sometimes is a way out of the dilemma, but as Wright has indicated, whether this is protection for the physician or for his patient is questionable.

It is, of course, easy to criticize in retrospect when one realizes that anticoagulation represented the first definitive therapy for a disease long handled only with supportive measures, but it is disturbing that the lesson of proper clinical assay has not been learned. As was recently pointed out by Sawyer et al., the same errors are being made with the thrombolytic agents which potentially offer a more physiologic, but presently an even more dangerous, form of therapy than anticoagulants. These authors who are among the pioneers in the field state that there is no practical or theoretical justification for the current release of certain fibrinolytic agents for therapeutic use, and that "poorly controlled large scale types of clinical evaluation usually reflect only the enthusiasm of the investigator, . . . and rarely provide useful information for further development." But their pleas appear to be unheeded, and fibrinolytic agents are advertised extensively.

Many examples of uncontrolled claims and unsupported sanguinity can be found in the literature concerning treatment of angina pectoris. Nitroglycerin still appears to be the most impressive drug for management of the acute pain, but the duration of its action is short and it has limited value in preventing attacks. Hence, a major effort has been made to develop longer-acting preparations. The xanthines have been extolled, but now are used rarely. Recently, it has been argued that they must be given as an elixir to be effective, a suggestion that will perhaps gladden the hearts of many patients, inasmuch as this method of administration assures a tidy intake of alcohol. Whether alcohol itself produces a beneficial effect by causing coronary vasodilatation or through its psychologic effects is a question which finds a parallel in the current discussions as to whether monamine oxidases actually increase coronary flow in angina pectoris or merely affect the subjective response to pain. Since the latter situation could lead a patient to ignore a warning signal to desist from activity, the issue is of vital import. Although it remains unsettled, the drugs are already in clinical use.

To judge by the volume of advertising, erythrol tetranitrate and various congeners and different dosage forms are currently the "hottest items"

for coronary dilatation. The literature contains controversy related not only to poor experimental design in some studies, but also to inconsistencies in the types of preparation, dosage, and routes of administration used by different investigators. Angina pectoris is a disease which by definition is a subjective syndrome. The symptoms are mimicked by many other conditions; they may be unassociated with objective findings; the extent of the coronary artery pathology may not be reflected in the severity of the pain; and the episodes are influenced by emotional factors, both in their precipitation and in their relief. These considerations demand precise experimental design and rigid control measures for successful clinical assay, and yet many studies fail to take them into account. Apparently, physicians have not learned the lessons taught by the early enthusiasms for khellin, heparin, and ligation of the internal mammary artery in angina pectoris, enthusiasms that were proved exorbitant by subsequent well controlled analyses.

Another common practice that has affected cardiovascular therapy in a particularly virulent form is the "getting into the act" school of drug development, illustrated by the thiazide diuretics. Here, a drug with fairly clear-cut effects has been duplicated by at least eight congeners. Little effort has been devoted to demonstrating that the congeners are more effective than the original; indeed, the few studies aimed at this question have revealed no significant differences. Undeterred, the multiplication of products continues and advertisements of these have increased markedly in medical journals.

No discussion of this type can omit the cholesterol problem. Hormones, unsaturated fats, nicotinic acid, cholesterol antagonists and inhibitors, low caloric liquid diets, and thyroid analogues have all been employed to lower levels of cholesterol. Restrictive diets are widely advertised and televised, if not prescribed, and many people have become "fat conscious" with changed social customs. For instance, whereas the quality of milk—and perhaps the affluence of its consumer—formerly was judged by its high butterfat content; now consumption of the product with the lowest fat content is considered the mark of the provident person and the intellectually elite. All this commotion obscures the relatively circumscribed nature of the statements of responsible scientists who point out that the evidence that a reduction of blood cholesterol will lessen the incidence or retard the course of atherosclerosis is circumstantial, and that many other factors are involved. A reasonable reduction in the intake of calories and of saturated fats is recommended by these authorities, but primarily as an article of faith—or more precisely, as an "epidemiologic experiment"—and not as a mandate.

The adoption of therapeutic measures and of medical theories on the basis of poorly documented evidence or of no evidence at all is, of course, not a new phenomenon, nor is the frequent sequel of disillusionment which follows the revelation of side effects, complications, or ineffectiveness of yesterday's discoveries. This process is, however, out of keeping with the aspiration to make the practice of medicine a rational, scientific endeavor.

It is evident that the current response of the medical profession to the problems and the opportunities created by the plethora of potent new

pharmacological agents is deficient in certain respects. New remedies are adopted rapidly, and apparently widely, at times in the face of poor or inadequate evidence. Many of these remedies, helpful or not, are not innocuous, but produce unpleasant side effects, toxicity, and sometimes even death.

Conclusions

The responsibility for providing rational and beneficial treatment is ultimately vested in the physician. It is suggested that this responsibility would be discharged more adequately if the following measures were introduced:

Increased attention in the education of the physician to the principles of clinical pharmacology.

Refusal on the part of individual physicians to prescribe a preparation before they are convinced by a critical examination of published evidence that this product is the best available therapy for the patient.

The adoption by medical journals of more critical standards for the publication of clinical papers.

Requirement on the part of the medical journals that advertisements for pharmaceuticals cite references to published papers that support their claims.

The adoption and enforcement by organized medicine of minimum standards to be met for the clinical trial of drugs generally and of non-approved drugs particularly.

Individually or collectively, the members of the medical profession must accept their responsibility for therapy. They face new problems and must find new ways of dealing with them. In the short term, a great deal might be accomplished if members of the medical profession took seriously a variant of the war-time admonition: "Is this prescription really necessary?" In the long term, physicians need to take the initiative to insure that the control of therapy will remain where it belongs—in the hands of scientific, objective, and conscientious physicians.

* From the Department of Biostatistics, Graduate School of Public Health, and the Department of Medicine, School of Medicine, University of Pittsburgh, Pittsburgh, Pa. Supported in part by Training Grant (HTS 5467) from the National Institutes of Health, U.S. Public Health Service.

* * * * *

Significance of Sodium Ions in Active Intestinal Transport of Nonelectrolytes.

T. Z. Csáky. *Amer J Physiol* 201:999, December 1961. The active transport of 3-O-methylglucose, L-tyrosine, DL-phenylalanine, and uracil was studied in the surviving isolated frog small intestine suspended in Ringer's solution of varying ionic compositions. The rate of active transport of each nonelectrolyte was significantly reduced if Li or K was substituted for Na as the principal cation in the nutrient medium surrounding both surfaces of the intestine.

Quarantine Inspection of International Air Travelers

M. L. McKinnon and L. C. R. Smith. Public Health Reports, PHS DHEW, 77:65-69, January 1962.

At 1:30 a.m., November 2, 1960, a flight originating in Brussels, Belgium arrived at Idlewild Airport in Jamaica, N. Y. The plane carried 40 passengers. The 27 United States citizens and 13 aliens were met by a U.S. quarantine inspector whose responsibility is to protect the United States against the importation of disease.

As part of the regular inspection procedure, each passenger was asked to name the places he had visited within the preceding 14 days. The combined itineraries of the 40 passengers included visits to 16 different European countries. In addition, one or more passengers had visited India, Israel, Jordan, Lebanon, Egypt, Morocco, Congo, Union of South Africa, and Venezuela. Because of possible exposure to quarantinable diseases, 9 of the 40 passengers were judged a risk to public health in this country.

Approximately one-half of all air passengers subject to U.S. quarantine inspection arrive at Idlewild Airport. In fiscal year 1960, 885,438 passengers subject to quarantine inspection entered the United States at this airport. Surveillance notices were issued to 42,779 passengers—a rate of 4.8 per 100 inspections. In fiscal year 1961, the number of passengers inspected for quarantine at the airport increased to 1,027,739 with 72,727 surveillance notices issued. The rate of issuance of surveillance notices had increased to 7.1 per 100 inspections.

In fiscal year 1961, more than 2 million air passengers arrived at all international airports in the United States from nonexempt areas of the world. The itineraries of many passengers included countries where quarantinable diseases are endemic, epidemic, or recurrent. As high speed travel between these countries and the United States increases, the danger of introducing quarantinable disease also increases.

To measure the extent of international air travel and its significance to the spread of communicable diseases, a pilot study was conducted by the Division of Foreign Quarantine, Public Health Service, at 14 international airports in 1960. The quarantine station at Idlewild Airport participated in this study, sampling 10% of flights arriving October 24 through November 2, 1960. The flight from Brussels was one of 32 flights carrying 2437 passengers whose combined itineraries included visits to 74 countries within 14 days prior to arrival in New York. In 17 of these countries, the presence of quarantinable disease—cholera, plague, smallpox, yellow fever, louseborne relapsing fever, or louseborne typhus—had been reported by the World Health Organization. Of the arriving passengers, 24 (1.0%) failed to present a valid smallpox vaccination certificate, and 155 (6.5%) were placed under surveillance as presenting a possible threat to the health of U.S. citizens.

* * * * *

Bleeding Duodenal Ulcer

Edwin L. Lame MD. Editorial: Radiology 78:125, January 1962.

The author reports as follows: "Physicians always have been fascinated by the rare and the exotic. Admirable as this trait is, the commonplace, and therefore clinically important, lesions must not be neglected. Hemorrhagic diseases, in particular, digestive tract lesions, are cases in point.

Dramatic and fashionable fads have directed to some diseases more than their share of attention: carcinoma, polyp, hiatal hernia, esophageal varices. A more factual balance can be regained by a review of the literature concerning large series of patients with upper gastrointestinal hemorrhage. A little arithmetic will disclose the causes in order of incidence:

- | | | |
|--------------------------------------------------------|--------------|-------------------------|
| 1. Duodenal ulcer | 20 to 90% | combined 65 to 92% |
| 2. Gastric ulcer | 11 to 21% | |
| 3. Cirrhosis, portal hypertension, or varices | 2.7 to 14.5% | |
| 4. Hiatal hernia | 0 to 4% | |
| 5. Gastric cancer | 0 to 4% | |
| 6. Other causes | 0 to 1% | |

Ill defined or relatively asymptomatic clinical states characterize the bleeding digestive lesion and place great demand on thorough investigation. To improve the diagnostic score, it will serve well to illuminate the neglected classical signs and also to search for new facts, the more so since a bleeding lesion often presents as an emergency—because of hemorrhage, not indigestion.

In 1950, University of Pennsylvania gastroenterologists published the results of placing citrated blood in the intestinal tract from duodenum to ileum. This appeared as red blood in the stool if it remained in the bowel under 8 hours; duodenal samples required 14 hours for conversion to black stool blood. It is known, also, that a large volume of blood originating in the upper tract and/or hypermotility (diarrhea) will cause the discharge of red blood at the anus.

Duodenal ulcer, the most frequent cause of all digestive tract hemorrhage, has yielded some interesting facts in an analysis of recent cases examined in this writer's department. Digestive symptoms occurred only 69 times in the 70 patients, whereas hemorrhagic symptoms presented 196 times (a ratio of 1 to 2). There were, however, no digestive symptoms in 34.2% of patients. Blood in the stool was the sole symptom in 15.7% of the 70 patients. It was purely black in 42.8%, purely red in 10%, and both red and black in 42.8%. Thus, 52.8% of patients had red blood in the stool during the admission illness.

The average hemoglobin was 8.5 gm and the minimum was 3.5 gm.

Recognition that little or no indigestion, marked anemia, and red as well as black blood in the stool spells bleeding duodenal ulcer more than any other lesion has improved our balance and our consultative function. "

* * * * *

Resuscitation from Drowning *

J.S. Redding, R.A. Cozine, G.C. Voigt, and Peter Safar, Baltimore, Md.
JAMA 178: 74-77, 23 December 1961.

Much is known about those errors in judgment which predispose to accidental death from drowning. Postmortem morphologic studies yield little information concerning the physiologic changes which precede death by drowning. In spite of this lack of information, numerous resuscitative measures to be applied in cases of near-drowning have been advocated. Many of them have been based on the assumption that drowning is essentially death from obstructive asphyxia with the complication of large volumes of water filling the lungs. Much stress has been placed upon the removal of water from the lungs and stomach during the early phase of resuscitation. Even though the inadequacy of the manual methods of artificial respiration (back-pressure arm-lift, chest-pressure arm-lift, and so forth) in resuscitating apneic victims of asphyxia has been clearly shown, the idea is still prevalent that these methods may be of value in expelling water from the airway.

Physiology of Drowning

Several attempts have been made to study drowning by observation of the overt response of animals to submersion. In the dog, submersion is followed by breath holding, swallowing of large volumes of water, vomiting, terminal gasps with flooding of the lungs, and death, all in rapid sequence. When drowning was interrupted prior to the stage of "terminal gasps" spontaneous survival usually followed. Resuscitative efforts had relatively little effect on survival.

Fresh Water. As early as 1902, Ravenstorf reported that, in fresh water drowning in animals, large volumes of water passed rapidly through the lungs into the circulation. Since that time a number of investigators have demonstrated in animals that in fresh water drowning large volumes of water pass through the lungs with extreme rapidity. Using deuterium oxide as a tracer, Swann and Spafford showed that after 2 minutes of submergence, a dog's blood might contain as much as 51% aspirated water. This marked hemodilution results in massive hemolysis and greatly dilutes blood concentrations of Na, Cl, Ca, and plasma proteins. Banting and co-workers first reported that ventricular fibrillation often occurs as a terminal event in fresh water drowning. The excellent studies of Swann et al established that the cause of the fibrillation was low plasma sodium, and that the phenomenon takes place only at low oxygen tensions. They prevented ventricular fibrillation in fresh water drowning by the intravenous injection of 37% sodium chloride, but were unable to reverse an established fibrillation. Since the time interval between submergence in fresh water and the development of ventricular fibrillation was so short, they concluded that there was no practical resuscitative technic for the condition.

Sea Water. Since sea water contains 3.5% salts, it is strongly hypertonic to blood. When sea water is aspirated, these salts diffuse into the blood

where there is a movement of water from the blood diluting the sea water contained in the lungs. There is rapid elevation of the plasma sodium concentration and hematocrit. A fulminating pulmonary edema develops in the lungs. Plasma protein is lost into the lung field. Hypotension and bradycardia develop, and death soon follows.

Conclusions

Spontaneous survival is likely in victims of near-drowning who are not apneic. When breathing movements are absent, efforts to remove water from the lungs result only in wasted time. Reoxygenation should be started immediately by means of an exhaled air (mouth-to-mouth) method, which should be continued until it is possible to apply intermittent positive pressure breathing with 100% oxygen. In victims of sea water near-drowning, once intermittent positive pressure breathing has been started, it should not be discontinued until a blood specimen can be examined and any plasma deficiency corrected. When ventricular fibrillation results from fresh water drowning, intermittent positive pressure breathing (preferably with oxygen and combined with closed chest cardiac massage) is a practical procedure preliminary to external electrical defibrillation. Prevention of delayed death after fresh water drowning depends upon the subsequent management of circulatory changes resulting from massive hemolysis, hypervolemia, electrolyte imbalances, and myocardial failure.

* Read before the Section on Anesthesiology at the 110th Annual Meeting of the A.M.A., New York City, June 28, 1961.

* * * * *

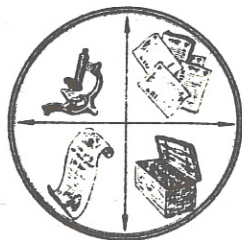
Occupational Health Problems on Nuclear Submarines

A Navy Medical officer, CDR John H. Schulte MC USN, discusses life aboard a nuclear submarine in terms of occupational health problems in the current issue of the Journal of the American Association of Industrial Nurses. The article is entitled "General Considerations of the Occupational Health Problems on a Nuclear Submarine."

CDR Schulte points out that many occupational health problems, safety, and normal injury and illness occurrences are the same on a nuclear submarine as in private industry. However, some health situations are unique to undersea life.

Among the special technical problems, CDR Schulte lists protection from radiation, and control of oxygen, carbon dioxide, heat, and humidity. He rates the planned use of leisure time as a major health concern, and describes the Navy's solution to this problem as twofold: careful screening of potential submariners to exclude those not temperamentally suited for the confined, below-the-surface life; and providing the maximum range of leisure time activities in the space available.

CDR Schulte resides at 3100 Linview Ave., Cincinnati, Ohio.



MISCELLANY

Syphilis Control in the United States

The Secretary of Health, Education, and Welfare, Abraham Ribicoff, on the 28th of January 1962 announced completion of a special Task Force report on the control of syphilis in the United States. Dr. Leona Baumgartner, New York City Health Commissioner, is Chairman of the 5-member group appointed last year by Dr. Luther L. Terry, Surgeon General of the Public Health Service.

In its report to the Surgeon General, the Task Force pointed out that almost 19,000 persons contracted infectious syphilis during fiscal year 1961, the highest number of cases since 1950. The group added that it is "particularly disturbed" by the following evidence:

1. A chain reaction exists in the spread of syphilis infection, especially among teenagers.
 2. The actual number of cases occurring far outnumber the cases reported.
 3. Effective technics of control and therapy to stop the spread of syphilis are available but not applied widely enough.
 4. Unless a vigorous, stepped-up program is inaugurated now, the increased spread of syphilis currently observed may be accelerated.
- However, according to the report "it is the consensus of the Task Force that the rising trend of infectious syphilis can be reversed through intensification and further improvement of the casefinding process, through quicker access to and use of operational information, increased participation in venereal disease control by private physicians, and through a fact-based, plain-talking venereal disease education effort."

Setting a 6 point 10-year goal for the elimination of syphilis as a public health hazard, the Task Force called for:

- a. An intensive national effort providing for at least two visits per year by a qualified health worker to the country's 100,000 general practitioners and one visit per year to the remaining 130,000 physicians.
- b. Establishment of a program to insure that all blood processing laboratories report to health departments all positive specimens by name of patient.
- c. Intensification and extension of current interview-investigation services to cover all infectious syphilis cases.

d. Development of a comprehensive and dynamic education program for professional workers and the general public.

e. Continuation of research in syphilis immunology, therapy, and laboratory procedure together with greater expansion of research in adolescent and young adult sex behavior.

f. Unstinted support of the program by Federal, State, and local governments even after the reported number of syphilis cases begins to decline.

The Task Force estimated the cost of its proposals at three and one-half million dollars annually over funds presently available.

In releasing the Task Force report, Mr. Ribicoff said, "I am exceedingly grateful to this distinguished group of experts for a penetrating and far-seeing analysis of this most pressing health problem. I assure them and the American people that this report will be intensively studied within the Public Health Service and the Department itself. Along with Surgeon General Terry, I too share the concern of this group with the growing problem of syphilis in this country."

The study committee was appointed in conformance with an instruction from the House Appropriations Committee. In last year's report on the Department of Health, Education, and Welfare budget, the Committee said it would expect recommendations this year from the Public Health Service for an effective campaign against syphilis. (From: U.S. Dept of H. E. W., Office of the Secretary, Washington 25, D. C.)

* * * * *

Armed Forces Epidemiological Board

The Armed Forces Epidemiological Board was conceived shortly before entry of the United States into World War II. On 27 December 1939, then Lt. Colonel James S. Simmons, late Dean of the Harvard School of Public Health, wrote a letter recommending the establishment of a "Board for the investigation and control of influenza and other epidemic diseases in the Army." The Secretary of War authorized the establishment of the Board on 11 January 1941, and thereafter it became known as the Army Epidemiological Board. In 1949, it officially became the Armed Forces Epidemiological Board, performing the same functions; all three military services participated actively in its activities.

This tri-service group was organized to develop more extensively than ever before the associations between military physicians and civilian specialists and civilian institutions dedicated to improving preventive medicine and public health practices. It was felt that this association would be of tremendous assistance in safeguarding the health of the Armed Forces on the one hand and, through the common sharing of scientific knowledge, in protecting the civilian public health generally. Furthermore, from the beginning, the Board has done much more than merely advise on the research aspects of military preventive medicine.

The original concept—in which the Board differs from other advisory groups—is that members of the various Commissions of the Board also conduct field investigations necessary to obtain the information required for solving preventive medicine problems of military importance. Such investigations are—more frequently than not—conducted during an interval between hostilities and are of an extremely basic nature. From such investigations have come penicillin prophylaxis of epidemic streptococcal disease, influenza vaccine, a group of therapeutic agents now widely accepted for the treatment of typhoid fever and rickettsial diseases, and various improved products and technics for immunization of troops.

The two most recent full scale "fire-fighting" efforts of the Board revolve around the occurrence of a disease relatively new to American experience, hemorrhagic fever, and the famous "Asian" influenza.

Presently, the Board and its Commissions are engaged in studies concerning acute respiratory diseases, influenza, streptococcal disease and staphylococcal disease, enteric infections, parasitic and rickettsial diseases, viral diseases in general, accidental trauma, and effects of radiation.

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Na⁺, K⁺, Ca⁺⁺, and Mg⁺⁺ Action on Coronary
Vascular Resistance in the Dog Heart

J. B. Scott, E. D. Frohlich, R. A. Hardin, and F. J. Haddy. Division of Environmental Medicine, USA Medical Research Laboratory, Fort Knox., Ky. Amer J Physiol 201: 1095-1100, December 1961.

Local effects of major cations on coronary vascular resistance were studied in the beating dog heart. This was accomplished by shunting the blood around the heart and lungs, clamping the arch of the aorta and perfusing arterial blood at a constant rate into the ascending aorta. Perfusion pressure was measured during intracoronary infusion of isotonic solutions of NaCl, KCl, CaCl₂, MgCl₂, MgSO₄ and hypertonic solutions of NaCl and KCl at rates which raised cation concentrations in coronary blood without significantly affecting concentrations generally within the body. Coronary vascular resistance decreased as a function of the infusion rate of isotonic solutions of KCl, MgCl₂, and MgSO₄, and increased as a function of the infusion rate of an isotonic solution of CaCl₂. Isotonic NaCl had no effect. Resistance changes occurred before measurable change in the proportion of a minute spent in electrical systole by the ventricle. These findings, together with those previously reported for the dog foreleg, suggest that the coronary vascular bed is actively dilated by localized slight increase in plasma concentration of K or Mg and actively constricted by localized slight increase in plasma concentration of Ca.

* * * * *

Rhythmic Contractions Controlled by Duodenal Pacemaker.* Rhythmic contractions of the small intestine were recorded in duodenal fistula dogs and in excised dog's intestine. The frequency of contraction showed a stepwise decrease from duodenum to ileum in both intact and excised intestine. Local cooling of a short segment of the upper duodenum caused a significant decrease in frequency of rhythmic contractions throughout the intestine below the cooled area but not above, without significant change in rectal temperature. The frequency of contractions in the excised intestine was 25 - 30% less than in corresponding areas of intact intestine. The results indicate that influences transmitted from the duodenum, perhaps associated with slow electrical waves, increase the frequency of rhythmic contractions throughout the entire small intestine, probably by stimulating the muscle to contract at a frequency in excess of its inherent myogenic rhythm. (R. Hasselbrack and J. E. Thomas, Dept of Physiology, College of Medical Evangelists, Loma Linda, Calif. Amer J Physiol 201: 955-960, November 1961)

* This work was supported by Grant A-1445 (C3S1) from the National Institutes of Health.

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American Board of Obstetrics and Gynecology

Office of the Secretary

Robert L. Faulkner, M.D.
2105 Adelbert Road
Cleveland 6, Ohio

The next scheduled examinations (Part II), oral and clinical, for all candidates will be conducted at the Edgewater Beach Hotel, Chicago, Ill., by the entire Board, April 9 through 14, 1962. Formal notice of the exact time of each candidate's examination will be sent him in advance of the examination dates.

Candidates who participated in the Part I Examinations will be notified of their eligibility for the Part II Examinations as soon as possible.

The deadline for the receipt of new and reopened applications for the 1963 examinations has been advanced to July 1, 1962. Candidates are urged to submit their applications as soon as possible before that time. (Training Branch, Professional Div, BuMed)

* * * * *

Airborne Rabies. Studies in Texas headed by Dr. Denny G. Constantine, chief of the Southwest Rabies Investigation Station, Communicable Disease Center, demonstrated that rabies virus can be transmitted through the air in certain Bat caves. A number of animals, including coyotes, dogs, foxes, and cats, were caged and placed in a bat-infested cave. Some cages were inside enclosures designed to keep out the smallest insects yet some coyotes and foxes housed in these cages became ill and died of rabies. Prior to this experiment, observations indicated that rabies is transmitted only by the bite of a rabid animal. (PHS DHEW)

Psittacosis and Hurricane Carla - Texas *

Morbidity and Mortality Report, Comm Dis Center, Atlanta, Ga.,
February 9, 1962, PHS DHEW.

Between October 28 and November 6, 1961, 22 of the 92 employees of a poultry processing plant in Texas developed an influenza-like respiratory illness. The disease was characterized by a fever of 101 to 102 degrees, chills, malaise, and cough. There was no evidence of pulmonary complications on X-ray. Eight cases were hospitalized from 3 to 4 days. All cases received tetracycline and became asymptomatic within short periods. Laboratory studies revealed complement-fixation titer rises to psittacosis in 17 of these cases. The epidemic curve showed one case appearing on the 28th of October and, beginning 4 days later, the remaining cases appearing within a 5-day period.

From October 17 to 26, turkeys from the suspect flock were processed and all employees who became ill had worked on days when this flock was being processed. Five apparently healthy turkeys from this flock were autopsied. All birds except one showed pericarditis, epicarditis, and thickening of the air sacs. One bird showed a "plastic exudate" membranous covering over the surface of the liver. Mouse inoculation with material from these four birds revealed inclusion bodies typical of those found with psittacosis.

Although this group of birds appeared to be the source of the human illnesses, the flock had shown no unusual illness patterns until October 22 and 23 when deaths in excess of expected numbers were observed. An accompanying graph shows that an unusually large percentage, 13.8% of birds from the suspect flock, were condemned on October 25.

The higher percentage on October 25 represents 131 birds (13.8%) condemned from a lot of 951. The epidemic curve is consistent with a common source exposure on October 25 for all but one of the human cases.

Investigation revealed that no unusual or undiagnosed illness had occurred in other animals on the premises of the owner of the flock. In addition to wild birds native to the area, however, it was noted that on September 11 the eye of Hurricane Carla passed directly over the premises. According to the owner, millions of birds including sea gulls, pelicans, other sea birds, Spanish doves, and sparrows were seen flying in the eye of the hurricane. For 2 or 3 days thereafter, sea gulls, singly and in small groups, were seen on the premises. It appears conceivable that some of the turkeys in the flock may have originally become infected by sea birds and that the spreading infection took a month and a half to reach epidemic proportions.

* Reported by A.B. Rich DVM MPH, Director, Division of Veterinary Public Health, State of Texas Dept of Health, Austin, Texas. Lawrence Pessarar MD DVM MPH, State of Texas Dept of Health, and M.S. Dickerson MD TMPH, Epidemiologist, Texas State Department of Health, Austin, Texas.

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IN MEMORIAM

| | |
|---------------------------------------|------------------|
| CAPT John H. Chambers MC USN (Ret) | 28 November 1961 |
| CAPT Robert H. Collins MC USN (Ret) | 8 October 1961 |
| CAPT Ralph M. McComas MC USN (Ret) | 16 October 1961 |
| CAPT Richard F. Redden DC USN (Ret) | 9 January 1962 |
| CAPT Harry J. Roche DC USN (Ret) | 3 November 1961 |
| CDR Zachariah A. Barker MC USN (Ret) | 6 January 1962 |
| CDR Conrad C. Fowkes MSC USN (Ret) | 31 January 1962 |
| LCDR Arthur H. Nelson MSC USN (Ret) | 14 December 1961 |
| LCDR Ida R. Paul NC USN (Ret) | 7 November 1961 |
| ENS Nellie Macleod NC USN (Ret) | 4 December 1961 |
| CMSW Earle D. Evvans MSC USN (Ret) | 6 September 1961 |
| CWO Percy Johnson MSC USN (Ret) | 2 November 1961 |
| CWO William F. Sheridan MSC USN (Ret) | 7 October 1961 |

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Naval Medical Research ReportsU.S. Naval Air Development Center, Aviation Medical Acceleration Laboratory, Johnsville, Pa.

1. Principles Concerning Pilot Performance in Centrifuge Simulations of Space Vehicles. MR 005.13-1004.1 Report No. 5, 22 December 1961.
2. A System for Continuous Integrated Recording of Reaction Time for a 4 Light Discrimination Task. MR 005.13-6002.4 Report No. 1, 29 December 1961.

U.S. Naval Medical Research Laboratory, U.S. Naval Submarine Base, New London, Conn.

1. Memorandum Report 61-8. Development and Evaluation of a Swimmer's Rescue Suit. MR 005-14.0001-1.03, 19 July 1961.
2. Human Factors and the Work Environment. II. The Impact of Isolation upon Personnel Report No. 358 MR 005.14-2100.03.07, 20 July 1961.
3. Ascorbic Acid Plasma Levels and Gingival Health in Personnel Wintering Over in Antarctica Report No. 359 MR 005.12-5220-2.06, 15 August '61.
4. Effect of Prolonged Exposure to 15% Carbon Dioxide on Calcium and Phosphorus Metabolism Report No. 360 MR 005.14-3002-1.05, 15 Sept 1961.
5. Study of Binocular Color Mixture Report No. 361 MR 005.14-1001-1.24, 20 September 1961.
6. The Cytochemistry of Anoxic and Anoxic-Ischemic Encephalopathy in Rats. Report No. 362 MR 005.14-3100-3.01, 22 September 1961.
7. Shape of the Red and Green Color Zone Gradients Report No. 363 MR 005.14-1001-1.25, 5 October 1961.
8. Memorandum Report No. 61-10. Supra-Aural Cushions in Audiometry MR 005.14-0100-1.04, 15 November 1961.

From the Note Book

ANNOUNCEMENT. The 43rd Annual Session of the American College of Physicians will be held in Philadelphia, Pa., 9 - 13 April 1962; general headquarters will be at Convention Hall. The Armed Forces Medical Services (Army, Navy, and Air Force Medical Departments) will sponsor a Social Hour on Thursday evening, 12 April, from 5:30 to 7:30 p.m. at the Commissioned Officers' Mess (Open), U.S. Naval Base, Philadelphia. The Commanding Officer, U.S. Naval Hospital, Philadelphia, Pa., is in charge of local arrangements. All Associates and Fellows of the American College of Physicians who are in the Army, Navy, or Air Force, and their wives and guests are cordially invited. The Social Hour will immediately precede the Annual Banquet of the College. (Consult the Armed Forces Medical Services Information Desk at the Annual Session for further details, including times when transportation will be furnished.

Van Slyke Award to NMRI Scientist. Dr. Julius Sendroy Jr has been chosen to receive the 1962 Van Slyke Award of the American Association of Clinical Chemists, Inc. (New York Metropolitan Section). This award consists of a medal, scroll, and an honorarium in recognition of "many contributions in the field of clinical chemistry." Presentation of the award will be at the Barbizon Plaza Hotel in New York City on 2 May 1962, at which time Dr. Sendroy will deliver a lecture on his scientific work. He is Chief Chemist on the staff of the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Maryland.

Medical Officers from USNH, San Diego Participate in Annual Meeting.

CAPT Bruce L. Canaga MC USN, Chief of Medicine, U.S. Naval Hospital, San Diego, Calif., spoke on the subject "Intra-Thoracic Manifestations of Gastrointestinal Tract Disease" at the Annual Meeting of the Tuberculosis and Health Association of California - California Trudeau Society held on 8 February 1962 in San Diego.

CDR Donald Kent MC USN, Head of Chest Service Department, U.S. Naval Hospital, San Diego, Calif. was in charge of the Demonstration of Inhalation Equipment at the same meeting.

CAPT Miller Appointed to Flu Commission. CAPT Lloyd F. Miller MC USN, Officer in Charge of NAMRU-4 has been appointed an Associate Member of the Commission on Influenza, Armed Forces Epidemiological Board for a 2-year term of office. The Commission is responsible through the Board to the Army, Navy, and Air Force for research and development on the prevention and therapy of influenza and other respiratory infections that are problems or potential problems to the military. Membership consists primarily of civilian scientists who are acknowledged authorities in this area of medicine. The Commission was largely responsible for the development and improvement of the influenza and adenovirus vaccines presently used by the Armed Forces.

Doctor Knox Participates in National Meeting. LCDR Paul R. Knox MC USN recently presented a paper on the scientific program at the Annual Meeting of the American Society of Anesthesiologists in Los Angeles. The subject was "Methosylflurane - A Clinical Evaluation": LCDR Knox and William C. North MD PhD, Division of Anesthesia, Duke University Medical Center. The paper was prepared by Dr. Knox during his assignment at Duke University Medical Center for postgraduate training. He is now a member of the Staff of Anesthesiology Service, U.S. Naval Hospital, San Diego, Calif.

Identification Bands for All Inpatients. The mandatory use of identification bands for all inpatients, as prescribed by BUMED INSTRUCTION 6320.34 has eliminated clerical and accounting problems formerly associated with the meal pass system in at least one naval hospital, according to the hospital administration division of the Bureau. By requiring the patient ration category number to be placed on the band at time of admission, the hospital has been able to eliminate the need for meal passes to identify and categorize patients having dining room privileges. (TIO BuMed News, 7 February 1962)

Electroencephalograph Studies of Naval Aviators. Observation of aviators who exhibited post-traumatic abnormal electroencephalograms pointed up to the need for baseline encephalographic records for comparison in these cases. Four types of electroencephalographic deviation from normal have been identified as occurring in 75% of pilots who have "blacked out" under increased "G" forces while flying, with or without accident; and in 9% of all aviation candidates. It is estimated that one-fourth of all unexplained aircraft accidents may be due to such episodes. Further refinements of criteria used in such studies are needed, and the relative significance of deviations from normal requires further analysis. Baseline electroencephalographic studies are being made on all aviation candidates; it is hoped that refinement of criteria will enable aviation medical officers to detect and eliminate potentially dangerous aviators. (Aviation Medicine Division, BuMed)

Command Changes at NNNMC, 16 February 1962. CAPT Robert B. Brown MC USN today relieved RADM Frank P. Kreuz MC USN as Commanding Officer of the National Naval Medical Center, Bethesda, Md. CAPT Brown who has been selected for promotion to Rear Admiral, Medical Corps USN, formerly commanded the U.S. Naval Hospital at the Center. ADM Kreuz will assume command of the U.S. Naval Hospital and the Hospital Corps School, Great Lakes, Ill., with additional duty as District Medical Officer, Ninth Naval District.

CAPT Robert O. Canada Jr MC USN relieved CAPT Brown as Commanding Officer of the Naval Hospital and as Deputy Commanding Officer, NNNMC. CAPT Canada was formerly CO, USNH, Jacksonville, Fla.

RADM Thomas H. Robbins Jr, USN, Commandant of the Potomac River Naval Command, made introductory remarks to the large audience. He emphasized the progress highlights of the Center and its component Commands, as well as the leadership and cooperative teamwork elements he has noted in the official relationship of the Center to his Command.

DENTAL**SECTION**

Reconstruction First, or
Periodontal Treatment First?

Gerald M. Kramer, DMD, 9 Nahant Street, Lynn, Mass. J Amer Dent Assn 64(2):199-201, February 1962.

The question whether reconstruction or periodontal treatment comes first presupposes that the cases under discussion require both periodontal treatment and reconstruction. The various types of cases in which one or both may be a consideration are as follows:

1. Instances in which periodontal disease is present but reconstruction is not indicated.
2. Instances of periodontal disease in which reconstruction is indicated and is necessary for the proper end result.
3. Instances of periodontal disease in which reconstruction may or may not be important. These are borderline cases in which the treatment plan may be revised during the progress of the case.
4. Instances of periodontal disease in which reconstruction is important as part of the treatment plan but the entire prognosis is in doubt.
5. Instances in which occlusal reconstruction is necessary but periodontal treatment is not indicated.

An answer to the title question also requires a clarification of the meaning of reconstruction. The following goals are commonly under consideration:

1. Prosthetic revision of the occlusal pattern for a variety of reasons.
2. Immobilization of teeth by fixed contact points. This may involve sections of the arch or the complete arch.
3. Generalized replacement of previous operative dental work because of overhangs, faulty contacts, poor contours, caries, cosmetic reasons and so forth.
4. Restoration of missing teeth by artificial replacements.

In this paper, the discussion of reconstruction as related to periodontal therapy will refer to the operative procedures listed.

The rational treatment of a disease entity is based on an understanding of its etiology. Therefore, in the treatment of periodontal disease it is important to appreciate that both inflammation and dysfunction are involved in its causation. Moreover, it is generally agreed that dysfunctional disorders may be primary in nature or may also occur secondarily to the inflammatory

breakdown as a result of diminished tooth housing. Consequently, in instances of inflammatory disease with no secondary traumatic influences, reconstruction treatment planning needs no consideration. It may enter such cases only if there are extensive caries, a cosmetic problem, or a need to replace missing teeth.

Reconstruction and periodontal treatment both enter the treatment plan in those instances in which inflammation and occlusal traumatism are causative or perpetuating factors in the breakdown or both. In such instances the disease may have advanced to the degree that there is a mechanical disadvantage in the clinical crown-clinical root ratio, and the maintenance of the dentition is not assured.

Integration of Periodontal Treatment and Reconstruction

Sequence of Procedures: A planned Sequence of Procedures will prevent duplication of effort. If optimum healing is to occur, the treatment should be completed in the shortest possible time.

Location of Restorative Margin on Root Surface: Other than problems of tooth contour and interproximal embrasures, the decision of margin placement is influenced by the caries index, the cosmetic problems, and the irritability of the gingiva.

Caries Index: When the caries index is high, a restorative margin placed subgingivally would follow the principle of extension for presentation. This would best reduce the incidence of additional caries. The problem of root caries after well-executed restorative dentistry can be a disheartening experience. Therefore, coverage of as much of the caries-susceptible root surface as possible is desirable.

Cosmetics: Cosmetics can be an influencing factor on margin placement, notably in the upper incisor region. Patients do not readily accept a visible restorative margin in this region; for this reason a subgingival placement would be the one of choice.

Irritability of the Gingiva: When a high degree of irritability is present in the gingival margins, restorations placed coronal to the soft tissue are preferred. Some measure of the reaction can be ascertained while provisional splints are in place. This is an aid in planning the location of the prosthesis.

Timing of Preparation and Cementation of the Restoration: The healing periodontal tissues do not follow a definite pattern. There are as many atypical healing wounds as there are bizarre forms of breakdown. Because of this, no hard and fast rule can be laid down for the time interval that should elapse between periodontal treatment and tooth preparation. However, it probably would be wise to delay final preparation and cementation at least 2 to 3 months for the following reasons:

1. The restoration may act as an irritant to the healing gingiva if prepared and cemented too soon. This, in turn, would interfere with the processes of healing.

2. The restoration may be placed on an area of root surface that the periodontium might have covered if allowed to reach its full growth potential. Subsequently, when there is an attempt at healing coronal to the cemented margin, a rolling of the gingival margin could occur which would not be conducive to the maintenance of a healthy periodontium.

Conclusion

It would seem from the previous discussion that final preparation of teeth and cementation of the restoration should follow periodontal treatment. Also, the possibility exists that a delay in operative and prosthetic procedures until after periodontal care may result in a reappraisal of the requirements of the case. With the exception of those instances in which immobilization is indicated, or in which caries, function, or cosmetics is an immediate problem, the sensible sequence to follow should be periodontal treatment first, reconstruction after.

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Soft Tissue Displacement Beneath Removable Partial and Complete Dentures

Capt Robert R. Lytle DC USN, Camp Lejeune, N. C. J Pros Dent 12(1):34-43, Jan-Feb 1962.

Summary

The soft tissue displacement which occurs beneath denture bases of removable partial and complete dentures was studied.

The magnitude of displacement was determined by making comparative measurements of casts from impressions made before and after soft tissue recovery.

Conclusions

1. Dentures that cause only minimal displacement of the subjacent soft tissues are more ideal than those that cause excessive displacement.
2. In order to minimize the displacement of the soft tissues beneath denture bases, the following procedures should be used: (1) Denture bases should be extended to cover the maximum area of the denture foundation compatible with the movement of the border tissues. (2) Denture bases should not extend into unhealed sockets. (3) Interceptive occlusal contacts should be eliminated prior to the time the patient wears a new denture.
3. Removable partial dentures should be designed with strategically placed rests on the remaining natural teeth.
4. Soft tissues that have been displaced by an ill-fitting denture should be returned to normal form before impressions are made for new dentures.

5. Future scientific advancements in removable denture service must include a more complete knowledge and understanding of the physiologic condition of the soft tissues of the denture foundation.

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Personnel and Professional Notes

First Woman Dentist Retires. Cdr Sara G. Krout DC USNR was transferred recently to the Retired Reserve and thus becomes the first woman dentist on the retired rolls of the Navy.

Born in Riga, Latvia, she received her D.D.S. there. Toward the close of World War I, she served in a Red Cross dental unit. After coming to the United States, she settled in the Chicago area where she attended the University of Illinois College of Dentistry. In 1928, Doctor Krout was licensed to practice dentistry and has maintained a private practice in Chicago, except for her period of active duty in the Navy.

In 1943 she became the first woman dentist commissioned in the Armed Forces when she accepted an appointment as a Lieutenant in the Dental Corps. She also became the first woman dentist on active duty in 1944 when she reported to the Administrative Command, U.S. Naval Training Center, Great Lakes, Illinois, for duty. She was separated from active duty in 1946 and retained her commission in the Naval Reserve. In April, 1948 Lieutenant Krout was assigned to Volunteer Dental Unit No. 9-6, Evanston, Illinois, and has continued her membership in this unit, which was redesignated U.S. Naval Reserve Dental Company 9-6, Evanston, Illinois. Promoted to Lieutenant Commander in 1950, she attained her present rank of Commander in 1955.

In addition to belonging to various dental societies and the Association of Military Surgeons, Commander Krout has been on the staff of the Women and Children's Hospital of Chicago; a member of the women's executive committee of the Office of Superintendent of Public Instruction of the State of Illinois; and also actively engaged in the Asthmatic Children's Aid Society.

Her husband was the late Maurice H. Krout, Ph.D., a noted Chicago psychologist.

Honolulu Dental Society Meeting. Officers of the Naval Dental Corps sponsored the December 1961 meeting of the Honolulu Dental Society. The meeting, attended by some 190 persons, was held at the Camp H.M. Smith Officers Mess (Open).

Capt V.J. Niiranen DC USN presented a lecture-demonstration entitled The Dentist's Role in Civil Defense.

Doctor Gert Petersen, of Copenhagen, Lectured at NDS. Dr. Gert Forum Petersen, of Copenhagen, Denmark, conducted a seminar for residents in prosthodontics at the U.S. Naval Dental School, NNMCC, Md., on Thursday, 14 December 1961. The instructors in the Prosthodontics Department and

other staff members were also present. Dr. Petersen discussed original research that he had performed in Copenhagen on Factors Affecting the Film Thickness of Zinc Phosphate Cement with Special Reference to the Particled Size of the Powder. He had been able to demonstrate, both by a clinical approach and by laboratory tests, that particle sizes vary greatly among the various zinc phosphate cements now commercially available. He had also observed that the particle size controls the ability to seat castings in tooth preparations. Of particular interest was his finding that the angulation of the crown preparation was a determining factor in seating a casting when considered in relation to the particle size of the cement.

In his own laboratory Dr. Petersen reduced the particle size of commercially available cements to 5 microns by a decanting process which he believes could be used commercially without greatly increasing the cost to the manufacturer.

Dr. Petersen is a Research Associate in the Department of Technology, The Royal Dental College of Copenhagen. At present, he is a guest-worker at the National Bureau of Standards.

Capt McAtee and Lt Fitzgerald Present Lectures. Capt V.R. McAtee DC USN, of the U.S. Naval Station, Subic Bay, was the guest speaker of the Olongapo Dental Society in the civilian community of Olongapo, Zambales, Republic of the Philippines. He presented a professional paper entitled Crown and Bridge.

Lt D.E. Fitzgerald DC USN, of the U.S. Naval Air Station, Cubi Point, also attended the meeting and lectured on The Uses and Abuses of the Dental Pulp.

Both Dental officers received honorary membership in the Dental Society during the same occasion which was attended by Dr. Luz C. Macapenpan, President, Philippine Dental Association, and Dr. Sofronio C. San Juan, President, Manila Dental Society and Member, Philippine Dental Assn. Board of Trustees.

New Navy Training Film. The recently developed U.S. Naval Dental Corps' training film The Dental Assistant, Operative MN-8913 has been distributed to all Navy training film libraries. All Navy training activities should procure the film from the appropriate Training Aids Section or Library. Civilian requests for the film should be addressed to the Audio-Visual Training Section, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D.C.

It is a 16 mm motion picture with color and sound, of 16 minutes running time. It is intended primarily for technicians who assist in operative dentistry, but also for the Dental officers with whom they work. The picture has 3 main sequences: First, the technician receives a new patient and accomplishes the important business of putting him at ease. Second, in a flashback, we watch the technician alone as he performs the duties necessary for readiness of the treatment room—preparation of equipment, supplies, and the room itself. Third, we return to the opening appointment and follow it through, as Dental officer and assistant work together in treating the patient. A brief summary completes the film.

Capt Scofield Appears Before Study Club. Capt Henry H. Scofield DC USN, Diplomate, American Board of Oral Pathology; Head, Oral Pathology Division,

USNDS, NNMC, Bethesda, Md., presented a lecture entitled Carcinoma of the Oral Cavity to members of The Old Dominion Study Club on 18 December 1961. The meeting was held at the Southgate Motel, Arlington, Va.

Bay Area Armed Forces Dental Study Group Meets. The Dental officers of the Dental Department, U. S. Naval Air Station, Alameda, were co-hosts with the Dental officers of the U. S. Army Central Dental Laboratory, Alameda Administrative Center, to the Bay Area Armed Forces Dental Study Group for their monthly meeting on 9 January 1962.

The meeting started with a tour of the Central Laboratory which processes dentures for the Army of the Western States, Hawaii, Alaska, and the Far East.

Following the tour, Cdr B. C. Sharp DC USN of the Naval Air Station presented a paper with slides entitled The Prosthetic Response to the Periodontal Problem.

The meeting adjourned to the Naval Air Station Officers' Club for a social hour and dinner. There were 17 military installations represented, with an attendance of 81 Dental officers. Capt Charles D. Hemphill DC USN, San Francisco Naval Shipyard, is the President of the group. Colonel W. O. Orsinger DC USA, is the Commanding Officer of the Central Laboratory and Capt Frank I. Gonzalez, Jr., DC USN is the Dental officer at the Naval Air Station, Alameda.

Dr. Hayward Lectures at Naval Dental School. Dr. James R. Hayward, Professor of Oral Surgery at the University of Michigan School of Dentistry, lectured on Management of Odontogenic Infections to staff, resident, and post-graduate Dental officers at the U. S. Naval Dental School, Bethesda, Md., on Friday, 12 January 1962.

Dr. Hayward is Director of the Section of Oral Surgery of the University Hospital. In addition to his membership in local, state, and national dental associations, Dr. Hayward is a member of the American Society of Oral Surgeons; a diplomate of the American Board of Oral Surgery; a fellow of the American Academy of Oral Pathology; and serves on the editorial board of the Journal of Oral Surgery.

Dental Officers Attendance at Professional Meetings. The Bureau of Medicine and Surgery encourages the attendance and participation of Dental officers in professional meetings. However, approval of TAD orders, from Bureau funds, to present papers and clinics at professional meetings are contingent, upon the availability of funds and any direct benefit which will contribute to the Naval Dental Corps programs. Therefore, Dental officers should not accept invitations to participate in professional meetings prior to obtaining Bureau approval unless the individual is prepared to bear the expense from personal funds.

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PREVENTIVE MEDICINE

Clostridium Food Poisoning - Connecticut, 1961

Morbidity and Mortality Wkly Rpt, DHEW, PHS, Vol 11, No. 4, 2 February 1962

Three outbreaks of Clostridium perfringens food poisoning occurred in Connecticut during 1961. The last occurred on 5 December 1961, as follows:

Approximately half of 68 people who had dined at a restaurant developed mild diarrhea and abdominal pain of a few hours duration within 8 or 14 hours after eating. In a few cases, nausea occurred but there was no vomiting. Of the 68 individuals, 38 ate roast beef, 18 ate broiled lobster, 9 ate turkey, and 3 ate picked-out lobster. Of the 26 with illness, 21 had eaten roast beef, 4 had eaten turkey, and 1 had eaten lobster.

Five roasts of beef, boned by the wholesale meat distributor, and averaging about 18 lbs. in weight, were used for this meal. These were cooked for about 3 hours in a 350° oven, coming out of the oven at about 4:15 p. m. Some were then kept on the steam table and some beside the steam table until used at 7:30 p. m. Au jus gravy was made at about 5:30 p. m. from the drippings of the roasts, a commercial beef base and seasonings. Drippings from the roasts were also used to moisten some of the turkey when it was removed from the refrigerator and warmed for use.

Samples of turkey, roast beef, and gravy were available for laboratory examination. No food poisoning organisms were found in the samples of turkey or roast beef examined. Clostridium perfringens was isolated from the gravy. Samples of the commercial beef base used in the gravy were negative. Nose and throat cultures of the meat cooks were negative.

The laboratory of the Connecticut State Department of Health routinely does anaerobic cultures on all samples of food examined in relation to food-borne outbreaks, except when epidemiological evidence strongly suggests that the outbreak is staphylococcal.

Two other outbreaks apparently due to Clostridium perfringens were identified in Connecticut in 1961, through this routine use of anaerobic cultures. One of these occurred at a Cub Scout dinner in February. Of 240 individuals attending this dinner, 75 experienced nausea, abdominal pain, and diarrhea 6 to 8 hours after eating. Clostridium perfringens was cultured from a sample of the roast beef used at this meal. The other outbreak was a family outbreak with 9 of 17 people who ate the dinner becoming ill 8 to 9 hours after

the meal. The illness was mild and consisted of diarrhea and abdominal pain of a few hours duration, associated with slight nausea. Clostridium perfringens was found in smoked ham and in homemade cheese used at this meal. (Reported by J. C. Hart, M. D., Director, Div of Preventable Dis, State of Conn. Dept of Health.) (Editor's Note: The incubation period in these 3 epidemics, 6 to 14 hours, and the clinical symptomatology, a mild illness with diarrhea and abdominal pain in the absence of vomiting, form a rather consistent clinical picture.)

* * * * *

Food Spoilage and Food Poisoning

David A. Harris, Epidemiologist, Div of Acute Communicable Dis, Los Angeles County Health Department Index, 6 January 1962.

The investigation of food-poisoning episodes is often complicated by the firm conviction of many people that only spoiled food is dangerous. Fifty years ago it was believed that food-poisoning episodes resulted from the ingestion of putrefied foods. It is now known that putrefaction of food does not necessarily produce toxic substances. In many parts of the world man consumes great quantities of decomposed food not only with safety but often with great relish. Examples of man's acceptance of spoilage is the use of rotten seal meat and rotten fish eggs for food by the Eskimos. Rotten eggs are considered a delicacy by the Chinese. Rotten fish is consumed regularly by thousands of Egyptian workers. In the United States widely accepted foods such as Limburger cheese, sauerkraut, and wine owe their special qualities to decomposition processes.

Many experiments have been made to determine whether or not spoilage in meat, poultry, etc., do produce toxic substances that would result in a food-poisoning type of illness. Pure cultures of putrefactive organisms have been fed to laboratory animals without causing any ill effects. These organisms were also injected intraperitoneally and intravenously without causing illness. Human volunteers have eaten large quantities of spoiled food. No illness resulted as long as they were not permitted to smell the bad odor.

There is, however, a relationship between food decomposition and food-poisoning. The same conditions which produce spoilage in food, namely warm, moist storage, also permit the incubation of other bacterial organisms that cause the illnesses referred to as "food poisoning." Staphylococci, salmonellae, streptococci and other food-poisoning type organisms all multiply in the 80° F to 100° F temperature range. Considering the ubiquitous nature of these bacteria we must assume that food can become contaminated during either its preparation or its display after cooking. Protein-rich foods provide a good medium for bacterial growth, and should be kept either hot, or under refrigeration, from the time of preparation until they are consumed. Holding foods at 140° F or higher or at 40° F or lower are both effective measures in preventing the growth of bacteria that cause food poisoning.

There is, however, one extremely dangerous type of food poisoning which may be associated with putrid foods, botulism. The botulinus organisms

may grow in a putrefying food with the production of one of the most poisonous toxins known to man. A bulging can or a boil over of the can's contents when it is opened, should be taken as a warning that the contents should not be eaten. In fact, they should not even be tasted. Because of the hazard of botulinus poisoning, the presence of a strong odor of spoilage or any evidence of abnormality of the container—even without odor—in a canned or bottled food is sufficient reason for discarding such food. The cost of a long hospitalization or perhaps a funeral is far in excess of the loss of a few cents worth of food.
(CommDisBr, PrevMedDiv, BuMed)

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Streptococcal Infection

The Need for Improved Recognition and Treatment for the Prevention of Rheumatic Fever

G. Czoniczer, M. Lees, and B. F. Massell. New Engl J Med 265(19): 951-952, 9 November 1961.

Although rheumatic fever can usually be prevented by penicillin treatment of streptococcal respiratory infections, a sizable number of patients with acute rheumatic fever are still being seen on the wards of the House of the Good Samaritan in Boston. Because of this experience the medical histories of 105 recently admitted patients were reviewed for the following purposes: to determine the reasons for the continuing occurrence of this disease despite the availability of an effective method of prevention; and to ascertain the characteristic symptoms of streptococcal infection and thus to be able to make recommendations for effective therapy.

The patients whose histories were reviewed were selected on the basis of the following criteria: unequivocal diagnosis of rheumatic fever; no previous rheumatic fever; recent streptococcal infection indicated by the presence of a high antistreptolysin O titer; and interval of 6 to 28 days between the symptoms of streptococcal infection and the first symptoms of rheumatic fever in cases in which the antecedent streptococcal infection could be identified by the medical history.

The authors found that not a single one of the 105 patients had received adequate penicillin therapy at the time of the antecedent streptococcal infection, and it therefore seemed likely that this lack of appropriate treatment explained the development of rheumatic fever.

In 69 cases therapy was not given because the patients had not been seen by a physician at the time of the streptococcal infection. The failure of parents to seek medical advice is understandable in 16 of these patients, in whom the streptococcal infections were entirely subclinical, and in 38 others, whose streptococcal infections were accompanied by mild symptoms. However, in 15 cases a physician had not been consulted in spite of the fact that symptoms had been fairly severe.

In the 14 of the remaining 36 patients who did receive medical attention, lack of appropriate therapy can be attributed to the fact that incorrect diagnosis (usually of viral disease) had been made. However, in 22 patients the physician either failed to give penicillin or gave it in inadequate amounts despite his making a diagnosis of some condition, such as acute tonsillitis or scarlet fever, that is frequently of streptococcal origin.

These observations indicate the need to give parents guides to determine when they should consult a physician and guides to physicians to determine when streptococcal infection should be suspected and when penicillin therapy should be used. With this purpose in mind, the authors reviewed the signs and symptoms of streptococcal infection in the 89 patients in whom the infection had been clinically evident (in 16 patients, the streptococcal infection had been completely subclinical). The outstanding manifestations and their frequency were as follows: sore throat and fever - 58; fever without sore throat - 17; sore throat without fever - 4; and respiratory symptoms but no sore throat and no fever - 10.

It is evident that of the two chief symptoms (fever and sore throat) that might alert parents and physicians to the possibility of streptococcal infection, fever was the more common. In fact, if fever had been used as a clue, streptococcal infection would have been suspected in 75 patients, or 70% of the entire group of 105 patients and 84% of the 89 patients with symptoms. Although the majority of patients had sore throat as well as fever, sore throat in the absence of fever was infrequent having been observed in only 4 patients.

These results provide a basis for the following recommendations that will lead to better recognition and management of streptococcal infections:

1. Whenever a child does not seem well in any way, his mother should take his temperature 4 times daily.

2. If definite fever (temperature of 101° F or more by mouth) is present, a physician should be consulted.

3. Unless the cause of the fever is obvious, the physician should have a throat culture taken. If this culture is found to be strongly positive for beta-hemolytic streptococci, it is likely that the illness is due to a streptococcal infection.

4. When definite fever is accompanied by a strongly positive culture, penicillin should be administered in adequate dosage. Such dosage can be provided by a single injection of 1,200,000 units of benzathine penicillin or by 400,000 units of orally administered penicillin 3 times daily for 10 days.
(CommDisBr, PrevMedDiv, BuMed)

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Men who look on nature, and their fellow-men, and cry that all is dark and gloomy, are in the right; but the sombre colors are reflections from their own jaundiced eyes and hearts. The real hues are delicate, and need a clearer vision.

—Charles Dickens

Public Health Service Warns Against Accidental
Poisoning of Children from Vending Machines

Hazards Control, University of California Information Exchange Bulletin,
Lawrence Radiation Laboratory, I(8), August 1961.

According to the U. S. Public Health Service National Clearinghouse for Poison Control Center:

Vending machines are becoming an increasingly integral part of our environment. In addition to their potential for providing a psychopharmacological lift, we understand they can now provide a morning (or evening) shave, with other machines providing the after-shave lotion. The recent news that they can distinguish valid from counterfeit bills opens new vistas. As a result of this versatility and ubiquity, however, certain types of vending machines may now be toxic hazards.

An Indiana patron of an automatic laundry was asked by his daughters, aged 9 and 7 years, for two nickels with which to purchase soft drinks. When, after a few minutes, he searched out the girls to find where such low-priced refreshments could be bought, he found the children with two unmarked paper cups full of a clear liquid. Only the older child had partaken, and she had promptly expelled the drink as unworthy. Neither child, therefore, was injured. The liquid turned out to be a bleach with up to 3% available chlorine. It had come from an easily operated vending machine with a coin slot 42 inches from the floor.

A brief survey of the Washington, D. C., area revealed that a number of automatic laundries use dispensing machines which produce cellophane packets of detergents in response to coins of various denominations. In addition, it has been brought to our attention that an Illinois firm has recently circulated a letter seeking to persuade entrepreneurs to own and operate aspirin dispensing machines.

The medical and public health professions should be alert to this relatively new source of poisons.

* * * * *

The Present Search for a Shark Repellent

Perry W. Gilbert, Department of Zoology, Cornell University, Ithaca, New York. Abstract presented at the annual meeting of the American Society of Ichthyologists and Herpetologists, University of Indiana, 28 August 1958.

There are approximately 350 living species of sharks. Of these, not more than two dozen species are considered dangerous. Some range widely, but their attacks on man, with few exceptions, occur in semitropical and tropical waters, between 40° N and 40° S latitude where the temperature of the water is 65° F or warmer. The regions most frequented by dangerous sharks include

Australia, the West Indies, and South Africa. In the latter area alone there were 23 attacks on man, 11 of which were fatal, between 1940 and 1952 (6 near Durban, 3 fatal, from 18 December 1957 through 3 April 1958).

The U. S. Naval Research Laboratory developed a chemical shark repellent composed of 20% copper acetate and 80% nigrosine type dye, mixed with a water soluble wax. These materials were compressed into a flat rectangular 6-1/2 ounce cake, packaged in a cloth bag secured by a tape, and enclosed in a waterproof plastic envelop. The repellent known as "Shark Chaser" became part of survival equipment issued to airmen who flew over waters between 45° N and 45° S latitude. Although the repellent performed admirably in various tests, subsequent accounts of its effectiveness by airmen and skin divers have been conflicting.

Tests conducted at the Lerner Marine Laboratory, Bimini, Bahamas, suggest that the copper acetate in the repellent may not be as repugnant to a dangerous shark as originally believed. Captive Lemon and Dusky sharks readily approached lures of fresh beef blood through a cloud of copper acetate. When "Shark Chaser" (copper acetate plus nigrosine type dye) was used with the same lure however, the sharks repeatedly avoided it. This suggests that possibly the dye is more repellent than is the copper acetate.

It was assumed that copper acetate hydrolyzes readily in sea water to form acetic acid which is repugnant to the olfactory sense of the shark. However, the acetate ion remains for the most part in solution and is not present in appreciable amounts as acetic acid. It has not been demonstrated that the copper ion is repellent to sharks. In view of the above, the value of copper acetate as a shark repellent is open to serious question.

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Shark Attacks During 1959

Perry W. Gilbert, Professor of Zoology, Cornell University, Ithaca, N. Y.; Leonard P. Schultz, Curator in Charge of the Division of Fishes, U. S. National Museum, Smithsonian Institution, Washington, D. C.; and Stewart Springer, Chief, Branch of Exploratory Fishing of the Division of Industrial Research, U. S. Fish and Wildlife Service, Washington, D. C. Science 132 (3423):323-326, 5 August 1960.

In 1959 there were recorded 36 unprovoked and 3 provoked attacks by sharks on man, of which approximately one-third were fatal. In 11 instances of doubtful attacks unprovoked sharks approached swimmers, but failed to make physical contact with them. There were also 5 instances in which unprovoked sharks mutilated victims of air and sea disasters; often there is no way of knowing whether the victims died before the sharks attacked or as a result of the attacks. Unprovoked sharks were reported as having made physical contact with a boat, life raft, water ski, or accessory equipment 12 times. There was no fatality.

Only 2 of the 36 unprovoked attacks occurred in water colder than 70° F. However, bathers and skin divers generally frequent waters warmer than 70° F.

in greater numbers, and a relationship probably exists between attack incidence and numbers of bathers and skin divers in the water at a given time.

The wisdom of the recommendation "never swim or dive alone" was pointed up when 5 out of a total of 12 bathers attacked by sharks were swimming alone or a considerable distance from their companions.

It is well established that sharks are frequently attracted to wounded and bleeding fish speared by skin divers, and that the shark danger zone is at or near the surface, where movements are less likely to be rhythmic and coordinated.

All but 6 attacks occurred between latitudes 35° N and 35° S. January was the worst month for shark attacks south of the equator, and August in Northern latitudes. Thirteen unprovoked attacks, 5 fatal, occurred in Australian waters and 12, 5 fatal, took place in United States and Mexican waters. South Africa ranked third with 4 attacks.

The following advice to bathers and swimmers is based on the best information available. It must be remembered above all that sharks are unpredictable. Moreover, relatively little is known about their behavior patterns and the environmental conditions which stimulate them to attack.

Advice to Bathers and Swimmers

Always swim with a companion. Do not become a lone target for attack by swimming away from the general area occupied by a group of swimmers and bathers.

If dangerous sharks are known to be in the area, stay out of the water.

Since blood attracts and excites sharks, do not enter or remain in the water with a bleeding wound.

Avoid swimming in extremely turbid or dirty water where underwater visibility is very poor.

Advice to Skin and SCUBA Divers

Always dive with a companion.

Do not spear, ride, or hang on to the tail of any shark. To provoke a shark, even a small and seemingly harmless one, is to invite possible severe injury.

Remove all speared fish from the water immediately; do not tow them in a bag or on a line cinched to the waist.

As a rule, a shark will circle its intended victim several times; get into a boat or out of the water as quickly as possible after sighting a circling shark before it has time to make an aggressive pass. Use a rhythmic beat with the feet and do not make an undue disturbance in the water as you move toward the boat or the shore. If wearing SCUBA, it is best to remain submerged until you have reached the boat.

If a shark moves in and there is no time to get out of the water, try not to panic, and keep the shark in view. It is often possible to discourage a shark

by releasing bubbles or, at close range, by hitting it on the snout with a club or "shark billy." Since the hide of a shark is very rough and may cause serious skin abrasion, use your bare hands only as a last resort. Shouting underwater may or may not discourage a shark.

Advice to Survivors of Air and Sea Disasters

Do not abandon your clothing when entering the water. Clothing, especially on the feet and legs, is your only protection against the rough skin of a shark.

Place wounded survivors in a life raft. All should use the raft if there is room.

Remain quiet and conserve energy. If you must swim, use regular strokes, either strong or lazy, but keep them rhythmic.

Do not trail arms or legs over the side of the raft.

Do not jettison blood or garbage, for this attracts sharks.

When sharks are nearby, do not fish from a life raft. Abandon hooked fish if a shark approaches.

When a shark is at close range, use "Shark Chaser" (U.S. Navy repellent) if it is available. The black dye will repel many species.

If your group is threatened while in the water, form a tight circle and face outward. If approached, hit the shark on the snout with any instrument at hand, preferably a heavy one. Use your bare hand only as a last resort.

Advice to all

Always swim with a companion. Avoid swimming at night or in extremely turbid or dirty water where underwater visibility is very poor.

Keep your head when a shark is sighted; leave the water as calmly and quickly as possible.

If an attack does occur, all possible effort should be made to control hemorrhage as quickly as possible, even before the victim reaches shore. If the wound is serious, the victim should be hospitalized as promptly as possible.

Adopt a sensible attitude toward sharks. Remember that the likelihood of attack is less than that of being struck by lightning. Attack, however, is almost assured when one deliberately grabs, injures, or in some other way provokes even a small and seemingly harmless shark.

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Synergism of Malathion Against Resistant Insects

Frederick W. Plapp, Jr., Gaines W. Eddy, Entomology Research Division,
U.S. Agricultural Research Service, Corvallis, Oregon. Science 134(3495):
2043, 22 December 1961.

Recent investigation has shown that resistance to organophosphates in insects is associated with a decline in ali-esterase activity and a change in the nature

of the ali-esterase from an enzyme (or enzymes) inhibited by organophosphates to an enzyme (or enzymes) capable of degrading them. This led to an investigation of the possibility that acquired resistance to malathion in insects might be overcome through use of ali-esterase inhibitors. Experiments were conducted with several tri-substituted aromatic and aliphatic derivatives of phosphoric acid which are known to be ali-esterase inhibitors.

It was found that the synergists reduced the resistance of a malathion-resistant colony of houseflies from about 100 fold to less than 5 fold. None of the synergists tested increased the toxicity of malathion to flies of the susceptible colony by as much as a factor of 2. In tests with mosquito larvae the same synergists completely overcame the 100 fold resistance. As with flies, the synergists failed to produce striking increases in toxicity to larvae of the susceptible colony.

Preliminary studies have indicated that the synergists inhibit the degradation of malathion by mosquito larvae. The most logical explanation is that the insects degrade malathion by cleavage of the carboethoxy ester linkages.

The results provide evidence that, at least in certain cases, acquired resistance to organophosphate insecticides can be overcome through selective inhibition of degradation mechanisms with noninsecticidal compounds.

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Parathion Poisoning

Griffith E. Quinby, Wenatchee, Washington, and Gordon B. Clappison, Yakima, Washington. Parathion Poisoning, A Near-Fatal Pediatric Case Treated with 2-Pyridine Aldoxime Methiodide (2-PAM), Archives of Environmental Health 3: 538-542, November 1961.









A two-year old boy accidentally ingested parathion with soil from a driveway where an insecticide concentrate had been spilled more than 6 months previously. Three intramuscular and 8 intravenous injections of atropine sulfate produced only transient response following the last few doses.











2-PAM (2-pyridine aldoxime methiodide), approximately 250 mg in 200 cc of normal saline, given after the atropine sulfate through a slow intravenous drip, was an extremely effective and rapid therapeutic agent. It reactivated cholinesterases and restored the critically ill child to near normal in less than 20 minutes. Paranitrophenol, a product of the hydrolysis of parathion, was excreted in the urine quite rapidly, clearing in about 30 hours from ingestion. The earliest level measured was the highest at about 253 micrograms per hour. Parathion (but no paranitrophenol) was recovered at 11 ppm from the feces. Because it is a specific antidote, 2-PAM should reduce the severity of illness and mortality rate of severe poisoning due to organic phosphorous compounds.

Since the submission of this article, two doctors at the University of Texas obtained equally dramatic improvement after 2-pyridine aldoxime methiodide (2-PAM) chloride was given to a 2-year old who had ingested parathion.

ZOONOSES

ANIMALS INVOLVED, MODE OF HUMAN INFECTION AND GEOGRAPHIC DISTRIBUTION OF MAJOR ZOONOSES IN THE AMERICAS

| Diseases | Animals Involved | Mode of Human Infection | Geographical Distribution |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------|
| VIRUS DISEASES | | | |
| ENCEPHALITIS, ARTHROPOD-BORNE |  HORSE, MULE, BIRDS | MOSQUITO BITE | WIDESPREAD |
| PSITTACOSIS |  PARROT, PARAKEET, PIGEON, TURKEY, HEN, DUCK | INHALATION, CONTACT | BRAZIL, CANADA, UNITED STATES |
| RABIES |  DOG, CAT, WOLF, FOX, BAT, SKUNK | ANIMAL BITE | WIDESPREAD |
| JUNGLE YELLOW FEVER |  MONKEY, OTHER VERTEBRATES | MOSQUITO BITE | JUNGLE AREAS |
| RICKETTSIAL DISEASES | | | |
| Q FEVER |  RAT, COW, SHEEP, HORSE, DOG, GOAT | INHALATION, TICK BITE | WIDESPREAD |
| SPOTTED FEVER (ROCKY MOUNTAIN, BRAZILIAN, COLOMBIAN) |  WILD RODENTS, OTHER ANIMALS | TICK BITE | BRAZIL, CANADA, COLOMBIA, MEXICO, PANAMA, UNITED STATES |
| TYPHUS FEVER (MURINE) |  RAT | FLEA BITE | WIDESPREAD |
| PROTOZOAL DISEASES | | | |
| [CHAGAS' DISEASE] TRYPANOSOMIASIS |  CAT, DOG, RODENTS | INSECT BITE (REDUVIDAE TRIATOMA), SKIN ABRASIONS, MUCOUS MEMBRANE | THROUGHOUT CENTRAL AND SOUTH AMERICA |

| Diseases | Animals Involved | Mode of Human Infection | Geographical Distribution |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------|
| BACTERIAL DISEASES | | | |
| ANTHRAX |  COW, HORSE, SHEEP, GOAT, SWINE, WILD ANIMALS | CONTAMINATED WOOL, HAIR, HIDES, AIR, FOOD, WATER | WIDESPREAD |
| BRUCELLOSIS |  COW, SWINE, GOAT, SHEEP, HORSE, DOG | OCCUPATIONAL EXPOSURE, MILK, MEAT OR OTHER CONTAMINATED FOOD | WIDESPREAD |
| LEPTOSPIROSIS |  RAT, DOG, COW, SWINE, RODENTS | CONTACT OF SKIN OR MUCOUS MEMBRANE WITH CONTAMINATED WATER OR DUST | WIDESPREAD |
| PLAGUE |  RODENTS | FLEA BITE | AREAS IN ARGENTINA, PERU, UNITED STATES, BRAZIL, VENEZUELA, ECUADOR, BOLIVIA |
| SALMONELLOSIS |  COW, SWINE, HEN, SHEEP, RAT, DOG, CAT | CONTAMINATED FOOD | WIDESPREAD |
| TUBERCULOSIS, BOVINE |  CATTLE, GOAT, SWINE, CAT | CONTACT, MILK AND DAIRY PRODUCTS | WIDESPREAD |
| TULAREMIA |  WILD ANIMALS, BIRDS | TICK BITE, SKIN CONTACT, WATER | CANADA, UNITED STATES |
| HELMINTH DISEASES | | | |
| HYDATIDOSIS |  DOG, RUMINANTS, SWINE, FOX, RODENTS | CONTACT, CONTAMINATED FOOD, WATER | THROUGHOUT SOUTH AMERICA |
| SCHISTOSOMIASIS |  RUMINANTS, SWINE, DOG, CAT | SKIN CONTACT WITH WATER CONTAMINATED WITH INTERMEDIATE HOST SNAILS | BRAZIL, CARIBBEAN ISLANDS, SURINAM AND VENEZUELA |
| TRICHINOSIS |  SWINE, RODENTS, WILD CARNIVORES | CONTAMINATED MEAT | ARGENTINA, CANADA, CHILE, HONDURAS, MEXICO, UNITED STATES |

Facts on Health Problems. Pan American Health Organization, WHO, Misc. Pub. No. 63, July 1961.

Zoonoses are the diseases naturally transmitted between animals and man. More than 100 zoonoses have been recognized. They have wide economic effects. First, they affect human health by producing sickness and loss of life in rural populations which may also spread to urban populations. Second, the toll on the economy is felt through the depletion or non-productivity of animal stock, through increases in the price of food, and through increases in prices of animal products.

RESERVE**SECTION**

Additional Selective Service
Call for Physicians
(concluded)

While the heavy impact of Selective Service physicians call-up upon 1st year residents in hospital specialty training programs is recognized, the validity of this approach in meeting Armed Forces medical manning objectives, in preference to the call-up of large numbers of Reserve Medical officers from active civilian practice—many of whom have had prior military service—has been generally accepted. No recognized authoritative medical group or agency had registered a categorical objection to this approach or proposed any alternatives to obtain physicians and other needed specialists prior to the end of the reporting period, although several hospital directors and chiefs of medical specialty services have written this office to protest the induction of individual residents from their service who, by virtue of their classification in the "available" category by Selective Service, are now being called to duty.

Selective Service Appeal Mechanism

The recent Selective Service calls for 1,025 physicians have particularly served to highlight the mechanism which exists in the Selective Service System to afford the individual physician, or hospital staff director an opportunity to appeal physician induction notices on an individual basis. One or more advisory committees have been established in each state to consider appeals of this nature when they are directed to the state headquarters of the Selective Service System. These committees are generally composed of two physicians, one of whom is the Chairman or Director of the State Board of Health, a dentist, a veterinarian and a nurse. Appeals may be further routed, when indicated, to the National Advisory Committee to the Selective Service System of which Dr. Roy J. Heffernan is Chairman, and whose membership includes representative members of the medical and allied professions. Generally, the Selective Service appeal mechanism may be brought into play when an individual physician believes his military service would constitute a severe personal hardship or when his loss to a community or hospital service might jeopardize the medical care available in the locality. All such appeals should be directed initially to the local draft board which will in turn refer them for consideration by the advisory committees in the light of comparable losses sustained by other specialty services and hospital house staffs, both locally and on a national scale. In instances where appeals of this nature are denied by the advisory

committees and the individual physician concerned is declared available for duty, he may, after receiving a commission in one of the military medical services, apply for a delay in the reporting date specified in his active duty orders. This request for delay may be favorably considered by the Armed Service concerned if an intercurrent hardship situation has developed subsequent to the Selective Service determination of the individual physician's availability. Aside from instances of this type, the Armed Services would, as a matter of policy, regard the Selective Service designation of a physician as "available" to be both final and binding. (Progress Report—Nov-Dec 1961, Office of Deputy Assistant Secretary of Defense (Health and Medical)).

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Continuation Boards Help to Ease the "Hump"

Many Reservists have expressed concern over the "hump" problem and methods the Navy is using to maintain an even promotion flow for United States Naval Reserve officers. Here's the latest word on the matter:

The continued promotion of large numbers of Naval Reserve officers—originally commissioned during World War II—has produced a "hump" in the senior grades in the Naval Reserve.

A similar problem required the attrition of Regular Navy captains and commanders starting 3 years ago. However, until enactment of Public Law 86-559 (Omnibus Amendments to the Reserve Officer Personnel Act) in 1960, both attrition and promotion stagnation were avoided in the Naval Reserve by counting only permanent officers in grade. Under the revised statute, however, officers holding temporary appointments are counted along with those with permanent appointments against the number of officers in each grade who may be in an active status. (Active status in this instance means members of the Ready Reserve or Standby Reserve, S-1.) This authorized strength may not be exceeded except to meet mobilization requirements.

The legally authorized strength of Naval Reserve officers in an active status is 150,000. The Secretary of the Navy has directed that 120,000 may be line officers and 30,000 may be staff corps officers. The authorized strength of line captains and commanders is limited to 1.5% and 7%, respectively, of the total authorized number of line officers. This would, therefore, limit the authorized strength to 1800 line captains and 8400 line commanders.

Mobilization requirements for senior Naval Reserve officers are more than met by the authorized strengths in the more senior grades of captain and commander.

This means, then, that the forced attrition of captains from active status which started last year will be necessary this year and for the next several years in order to continue to provide equitable selection opportunity to those coming into the zone for promotion to captain. This action will prevent the further aggravation of the hump problem that would occur if the number of captains in an active status were permitted to rise above its current legal limit. The same action may be necessary starting in Fiscal Year 1964 for officers in the grade of commander.

The selection board, which convened in January to consider eligible Naval Reserve line captains for promotion to the grade of rear admiral, was reconvened as a "continuation board" to recommend the necessary number of captains for transfer from an active status. This board, with appropriate staff corps membership, will also consider staff corps captains for proportional retention or transfer from an active status in order to provide a proper balance of military skills in the event of mobilization.

Officers transferred from an active status will be placed on the Inactive Status List and afforded the option of requesting transfer to the Retired Reserve. Officers entitled to be credited with at least 18, but less than 20, years of satisfactory Federal service at the time such transfer action is necessary will be retained in an active status for a period sufficient to permit them to complete their 20 years of satisfactory service for retirement purposes.

Officers considered for continuation last year will not be reconsidered. Each captain will be considered by a continuation board once. Officers in the area of consideration during Fiscal Year 1962 were notified individually before the board convened and will be informed promptly of the board's recommendation. (The Naval Reservist, NavPers 15653, February 1962.)

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POSTAGE AND FEES PAID
NAVY DEPARTMENT

DEPARTMENT OF THE NAVY
U. S. NAVAL MEDICAL SCHOOL
NATIONAL NAVAL MEDICAL CENTER
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